36512/CAG/G373

WHAT IS CLAIMED IS

1. An inductive coil for an electromotive device, comprising:

a pair of concentric conductive sheet metal windings separated by an encapsulating material, each of the windings consisting of a plurality of axially extending conductive bands each being separated from an adjacent conductive band by a space, each of the conductive bands of one of the windings being coupled to one of the conductive bands of the other winding.

2. The inductive coil of claim 1 wherein the encapsulating material comprises polyimide.

3. The inductive coil of claim 1 further comprising a non-conductive filament wrapped around an outer surface of said one of the windings.

4. The inductive coil of claim 3 wherein the non-conductive filament comprises fiberglass.

5. The inductive coil of claim 3 wherein a thickness of the non-conductive filament is about 0.00030-0.00075 inch.

6. The inductive coil of claim 1 wherein each of the spaces separating the conductive bands is less than 2.5 times the thickness of each of the conductive bands.

7. The inductive coil of claim 6 wherein each of the spaces between the conductive bands is about 1 - 1.5 times the thickness of each of the conductive bands.

8. The inductive coil of claim 1 wherein each of the

36512/CAG/G373

conductive sheet metal windings comprises precision machined and rolled copper.

9. The inductive coil of claim 1 wherein the conductive bands of said one of the windings forms a half circuit.

10. The inductive coil of claim 9 wherein the conductive bands of the other winding forms a complimentary half circuit.

11. The inductive coil of claim 1 further comprising a commutator having a plurality of current conducting segments, each of the segments being electrically coupled to one of the conductive bands, a flywheel coupled inside the windings adjacent the commutator, and a shaft axially coupled inside the windings.

12. The inductive coil of claim 11 wherein said flywheel comprises anodized aluminum.

13. A method of fabricating an inductive coil from a pair of conductive plates, comprising:

cutting each said plate in a pattern to produce a series of conductive bands and cutouts;

rolling said cut plates into telescoping inner and outer tubes;

wrapping said inner tube;

inserting said wrapped inner tube into said outer tube;

wrapping said outer tube; and

coupling said conductive bands of said inner tube to said conductive bands of said outer tube to form the helical induction coil.

14. A method of fabricating an inductive coil, comprising:

forming a pair of conductive metal sheets in a pattern to produce a plurality of conductive bands each being separated from an adjacent conductive band by a space;

shaping the formed conductive sheets into inner and outer windings;

coating the inner winding;

positioning the coated inner winding into the outer winding;

coating the outer winding; and

coupling each of the conductive bands of the inner winding to one of the conductive bands of the outer winding.

15. The method of claim 14 wherein the formation of each of the conductive sheets further comprises precision machining and rolling a copper sheet.

16. The method of claim 14 wherein the formation of each of the conductive sheets further comprises forming each of the conductive sheets such that each of the spaces separating the conductive bands is less than 2.5 times the thickness of each of the conductive bands.

17. The method of claim 16 wherein each of the spaces separating the conductive bands is about 1 - 1.5 times the thickness of each of the conductive bands.

18. The method of claim 14 wherein the formation of each of the conductive sheets further comprises forming each of the conductive sheets without a supporting structure attached thereto.

36512/CAG/G373

19. The method of claim 14 wherein the coating of the inner winding comprises wrapping a non-conductive filament around an outer surface thereof.

20. The method of claim 19 wherein the wrapping of the non-conductive filament is wrapped to a thickness of about 0.00030-0.00075 inch.

21. The method of claim 19 wherein the non-conductive filament comprises fiberglass.

22. The method of claim 14 wherein the positioning of the coated inner winding into the outer winding is performed by concentrically and axially aligning the windings.

23. The method of claim 14 further comprising assembling a flywheel and coupling the assembled flywheel and a commutator to the windings, and encapsulating the windings in an encapsulating material.

24. The method of claim 23 wherein the encapsulating material comprises polyimide.

25. The method of claim 14 further comprising assembling a flywheel and coupling the assembled flywheel and a commutator to the windings, centrifuging the windings in a potting material, heating the centrifuged windings to cure the potting material, and cooling the heated windings.

26. An inductive coil for an electromotive device, comprising:

a pair of concentric conductive sheet metal windings each consisting of alternating axially extending conductive bands and spaces, each of the conductive bands having a

tensile strength greater than 40,000 psi, each of the conductive bands of one of the windings being coupled to one of the conductive bands of the other winding.

27. An inductive coil for an electromotive device, comprising:

a pair of concentric conductive sheet metal windings each consisting of alternating axially extending conductive bands and spaces, each of the conductive bands having a yield strength greater than 30,000 psi, each of the conductive bands of one of the windings being coupled to one of the conductive bands of the other winding.

28. An inductive coil for an electromotive device, comprising:

a pair of concentric conductive sheet metal windings each consisting of alternating axially extending conductive bands and spaces, each of the conductive bands having a percent elongation less than 20%, each of the conductive bands of one of the windings being coupled to one of the conductive bands of the other winding.

29. An inductive coil for an electromotive device, comprising:

a pair of concentric conductive sheet metal windings each consisting of alternating axially extending conductive bands and spaces, each of the conductive bands having a hardness greater than a Brunell number of 70, each of the conductive bands of one of the windings being coupled to one of the conductive bands of the other winding.

add B3

add D2